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Long-haul fishing, as developed in North Carolina's Carteret County at the turn of the Century, is still an economical and efficient method of harvesting fish in shallow water.

The Long-Haul Fishery of North Carolina

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ABSTRACT

Methods and gear used in the long-haul fishery of North Carolina are described. Long-haul fishing, in which a 1,000-yard by 6-foot deep net is pulled up to 5 miles before the fish are landed, is especially adaptable to shallow-water areas with unobstructed bottoms. Sufficient detail is given to enable the reader to adopt the method for fishing in other areas.

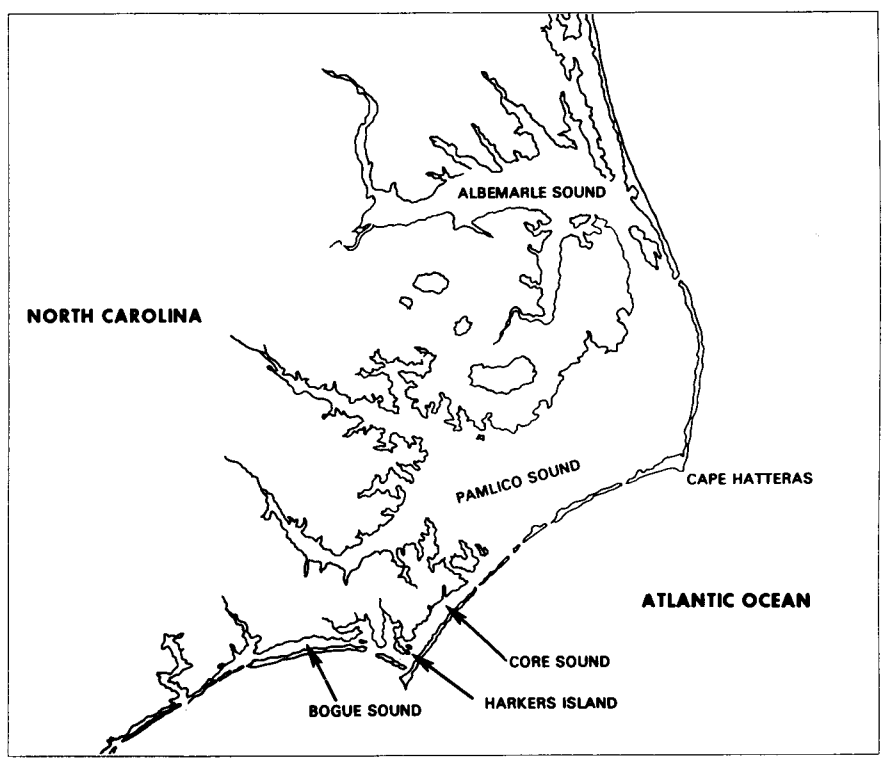
INTRODUCTION

Long-haul fishing has been used to harvest fish in the shallow, inside waters of Albemarle, Pamlico, Core and Bogue sounds, North Carolina since the early 1900's (Figure 1). In long-hauling, a 1,000- to 1,200-yard 6-foot deep net is pulled between two boats for up to 5 miles before the fish are encircled and concentrated by pulling the net around a stake (Figure 2). Long-haul fishing is somewhat unique because the cork line remains a few feet (dependent on depth of the water) under the water surface during the haul but the lead line remains on the bottom. Bottom fish and most others leisurely swim ahead of the slow moving net instead of escaping over the sunken cork line and do not try to escape. At the end of the haul they are trapped in a deeper section of net whose cork line floats at the surface. The methods of long-haul fishing should be applicable for harvesting fish in other shallow water areas with unobstructed bottoms. In this paper we describe the gear and methods used by fishermen from Harkers Island in Carteret County, and give a brief history of the fishery and catches.

DESCRIPTION OF THE LONG-HAUL GEAR

The long-haul net is divided into six or eight sections 100 to 150 yards long that are called wing and back nets (Figure 3). Since the cork line of the net is under the water surface when being pulled, a floating buoy is attached to each section to warn vessels from passing over and fouling the gear. In this report our discussions pertain to nets composed of eight sections, four wing and four back nets.

Figure 1.—Long-haul fishing areas in North Carolina.



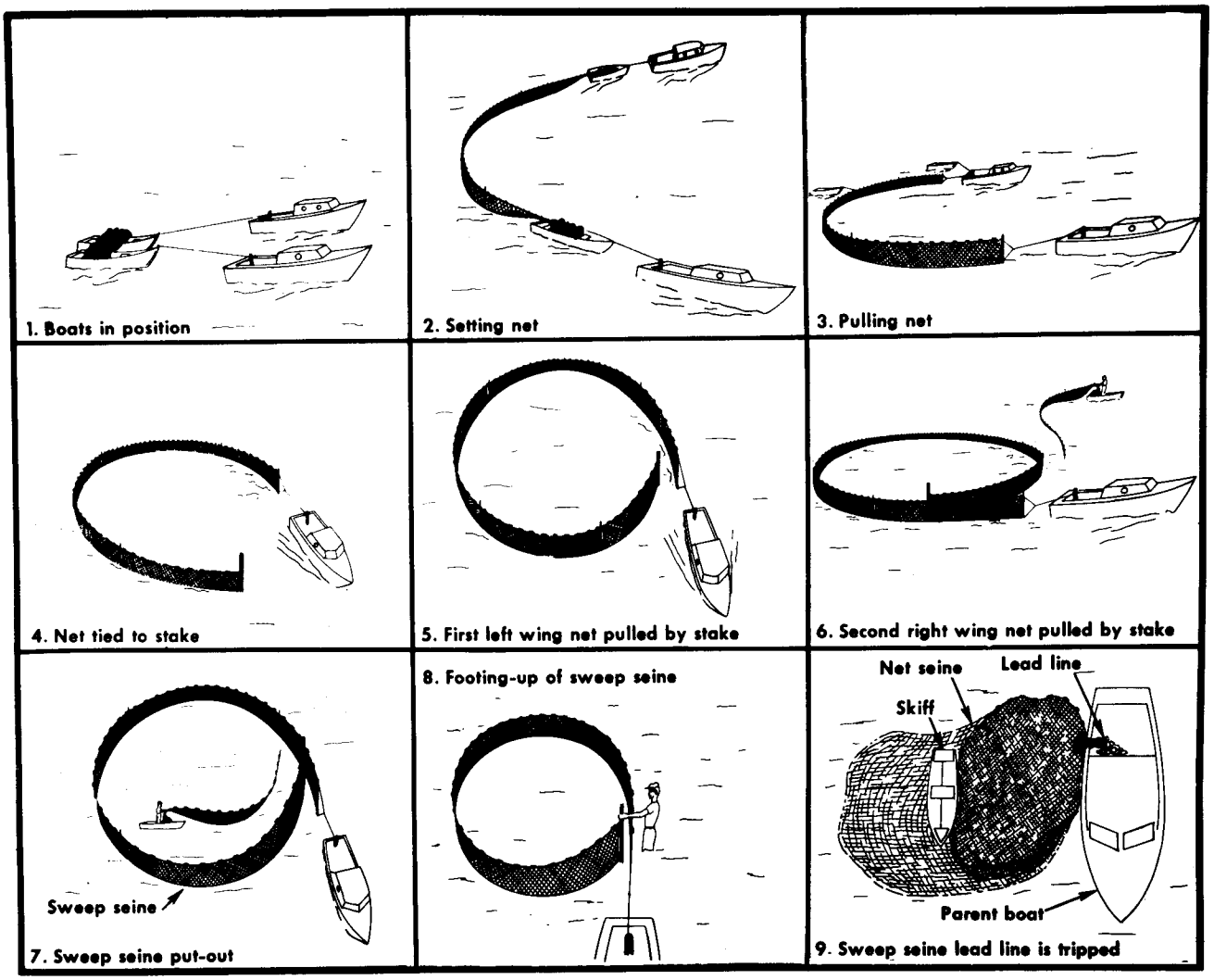


Figure 2.—Sequence of long-haul fishing.

All back and wing sections are constructed of number 9 twine and hung with number 18 thread twine on $^{7}/_{16}$ or ½-inch poly-type rope. Depth of the 2-inch bar wing nets is 30 meshes and depth of the 1⅛ inch bar back nets is 65 meshes. The typical net is taken up five meshes in the space of three. Two and one-half inch corks are placed on every fifth knot or with four ties between corks. Three 2-ounce leads are used for every three corks on both wing and back nets. In each section of net the lead line is 2½ to 3 yards longer than the cork line which allows the cork line to float higher and slightly ahead of the lead line and helps prevent the lead line from cutting into the mud while the net is being pulled.

The two center back nets have a staff on each end where the two halves of the long-haul net are joined. The wing nets are put together by beckets which are overlapped 7 to 9 feet (Figure 3, insert). A staff, 7 feet long and weighted on the bottom, is attached to each end of the long-haul net and a 75-foot, ½-inch poly-type tow rope is attached from the staff to a pull boat. The two pull boats range from 20 to 45 feet long and are powered with six or eight cylinder automobile engines or marine diesels (Figure 4). Two skiffs about 18 to 24 feet long and 7 feet wide are used to carry the nets. A six-man crew is normally used.

The 75-yard long sweep seine, which is much deeper and whose cork line floats at the surface, is put overboard at the end of the haul to hold the fish. It has ⅞-inch bar mesh and is constructed of number 9 twine and is 150 meshes deep except for the bail-bunt end (the last 7 to 10 yards), which is 200 meshes deep and constructed of number 12 twine. In the bail bunt, 4-inch corks are hung solid

and three 2-ounce leads are put in each tie. In the rest of the sweep seine the corks remain almost solid but are reduced in size and only two 2-ounce leads are used in each tie.

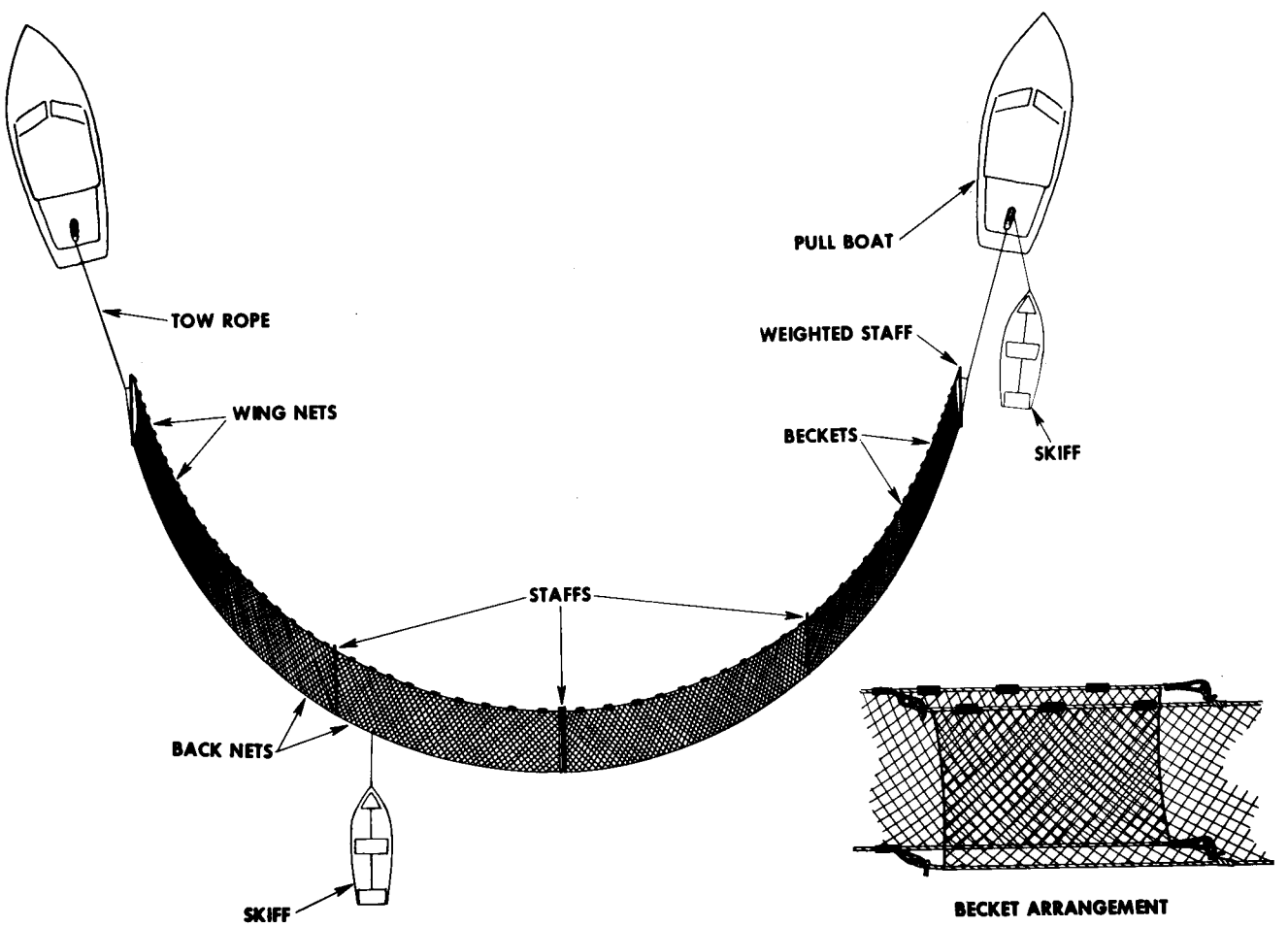
METHODS OF LONG-HAUL FISHING

In preparing to make a haul, the crew place the back and wing nets aft aboard the two skiffs with the cork lines facing the bow to prevent lead and cork lines from crossing as the net is set. The sweep seine, which is put out by hand, is placed in the middle of the largest skiff with the cork line facing aft. When the nets are ready to be fished, the staffs of the two back nets are lashed together. The pull boats take the skiffs in tow and pull the back and wing nets out of the skiffs in the direction the haul is to be made, usually with the ebb tide because the net is too large to pull against a current (Figure 2). After the entire net is in the water, the tow rope is hooked directly from the pull boats to the staffs. The skiffs are towed and are used to free the net if it becomes tangled.

Long-hauling is carefully timed to enable the nets to be landed on slack tide at a predetermined shallow-water landing point, sometimes more than 5 miles away. If timing is off and the net is too far away from the intended landing point when the tide changes, the haul is terminated. If the haul goes well, a skiff is sent to the shallow-water area (the water must be shallow enough to enable the crew to stand on bottom) to plant a 3-inch diameter "footing-up-stake" which is used in concentrating the fish in the net.

Sections of net are cut-out after they have been pulled by the stake. The crew on the lead pull-boat (right, in our discussion) tie the end of the net to the stake and anchor their boat so they can assist in cutting-out sections of net (Figure 2). After the right end of the net is tied, the left boat pulls

Figure 3.—Components of a long-haul net.



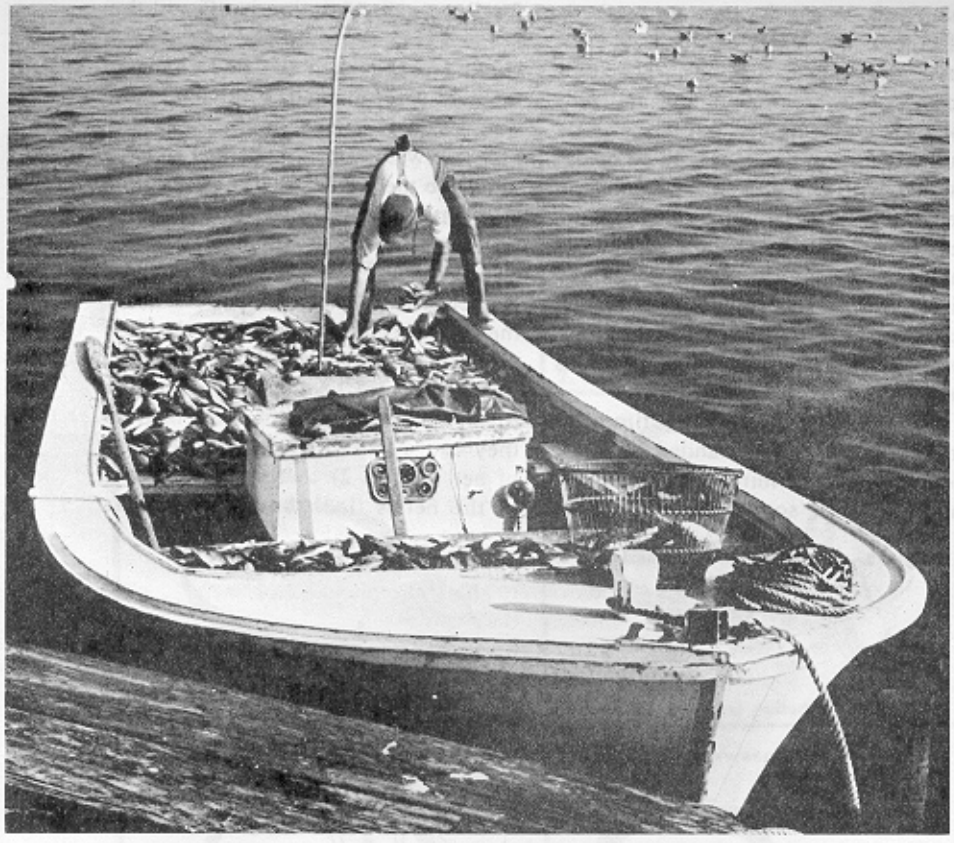


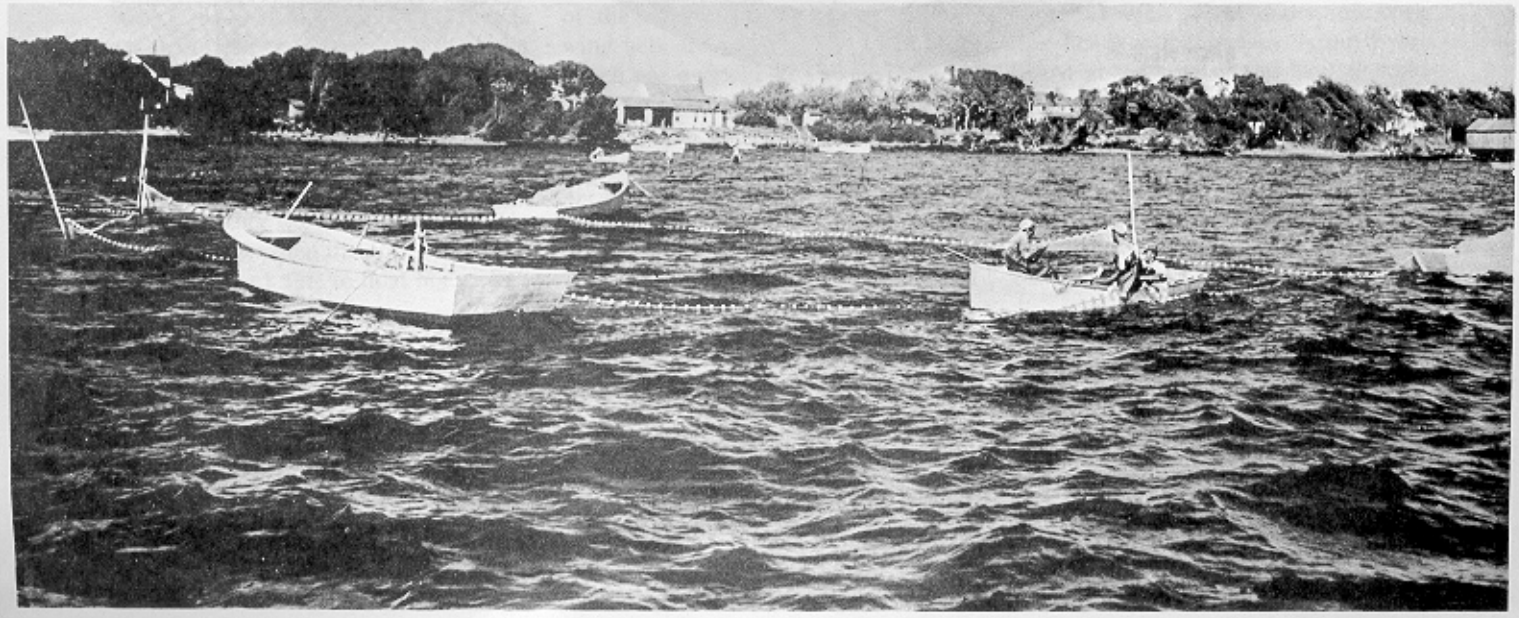
Figure 4.—Pull boat loaded with a catch of spot.

the first left wing section by the stake, which is cut-out and taken-up by the skiff crew. The boat returns to the stake and pulls the first right wing net by the stake, which also is cut-out and taken up. The process is repeated until the second left and second right wing nets are taken up. After the first right back net has been pulled by the stake 50-70 yards, the sweep seine is put out on the outside of the long-haul net and the bail-bunt end is tied to the stake. The other end is tied to the front staff on the second right back net. The first right back net is then taken up on the inside of the net. As the boat pulls the remaining sections of net by the stake from the left and the skiff crew cut them out, one man keeps the lead line footed-down and the net against the stake if fish begin escaping.

After all sections have been taken up, the sweep seine is pulled past the stake by hand or with the boat until the bail-bunt end staff is tripped (all the lead line is taken up). Care must be taken to keep the lead line on the bottom and the loose net of the seine against the stake or the entire catch can escape. The sweep-seine net is handled in much the same way as a purse seine and the fish are dip-netted from the bail bunt into the boat. If the catch is extremely large and the end staff cannot be tripped, the sweep seine has to be staked-up with oars or saplings (Figure 5) and the fish taken out of the sweep seine with a hand-pulled trawl which is swept across the seine. After sufficient fish have been removed by the trawl, the sweep-seine staff can be tripped and the remaining fish removed with dip nets.

A modified method of long-hauling has also been developed in recent years and it utilizes a net called a "swiper." The net consists of one-half of a regular long-haul gear (two wing and two back nets) with a sweep seine attached to the rear staff of the second back net. With this "swiper" method the bail-bunt end of the net is tied to a footing-up-stake and the other end is pulled in a wide circle back to the stake (Figure 6). "Footing-up" of the net takes place, as in regular long-hauling, when the sections are pulled past the stake and cut out. Individual "swiper" catches are usually smaller than regular long-haul catches because of the small area covered, but a crew of only three with one pull boat and skiff is needed and several hauls can

Figure 5.—Sweep seine staked-up.



be made per day. The method is especially adaptable for hauling small areas where fish are known to be abundant, whereas regular long-hauling can be profitably used in large areas where fish are not concentrated.

HISTORY OF LONG-HAUL FISHING

Long-haul fishing was evidently developed in Carteret County, N.C., which still leads in production from this gear. According to older fishermen the fishery started around Atlantic, N.C. in about 1910. The fishery, initially conducted only in October and November, was designed especially for spot, *Leiostomus xanthurus*, which was abundant and could be more profitably fished than other species. Prior to 1910 the catch of spot in North Carolina was less than one-half million pounds. After development of the long-haul fishery, annual catches between 1910 and 1930 often reached 5 million pounds (Taylor, 1951).

The present fishery starts in early July, continues into November, and still concentrates principally on spot. Now, however, large quantities of bluefish, *Pomatomus saltatrix;* Atlantic croaker, *Micropogon undulatus;* pigfish, *Orthopristis chrysopterus;* weakfish, *Cynoscion regalis;* and northern kingfish, *Menticirrhus saxatilis*, are taken as well as small quantities of other edible fish (Table 1). Before 1964, records of catches for common haul seines and long-haul seines were not separated. Since 1964, catches from "swipers" are included with those made with regular long-haul gear. Although not recorded, the highest known catch for one haul in modern days was 258,000 pounds of spot, which was taken in Pamlico Sound, N.C.

Long-haul fishing became more effective when nylon nets replaced cotton nets. Nylon nets were lighter and easier to handle, and the cork line did not sink as far under the water surface. With cotton nets the cork line stayed about 3-4 feet off the bottom when being pulled, whereas the cork line on nylon nets fished 5-6 feet off the bottom. Because of the increased efficiency when using nylon nets, long-haul crews can make two hauls per day.

In the past when many long-haul crews were fishing in the same general areas, selection of the preferred hauling sites was determined before the season began by a drawing. This method eliminated fierce competition and fishermen willingly abided by the results of the drawing. The order of hauling was broken only with the permission of the crew which was scheduled to haul on a given day.

A reduction in fishing effort in

Figure 6.—Sequence of swiper-net fishing methods.

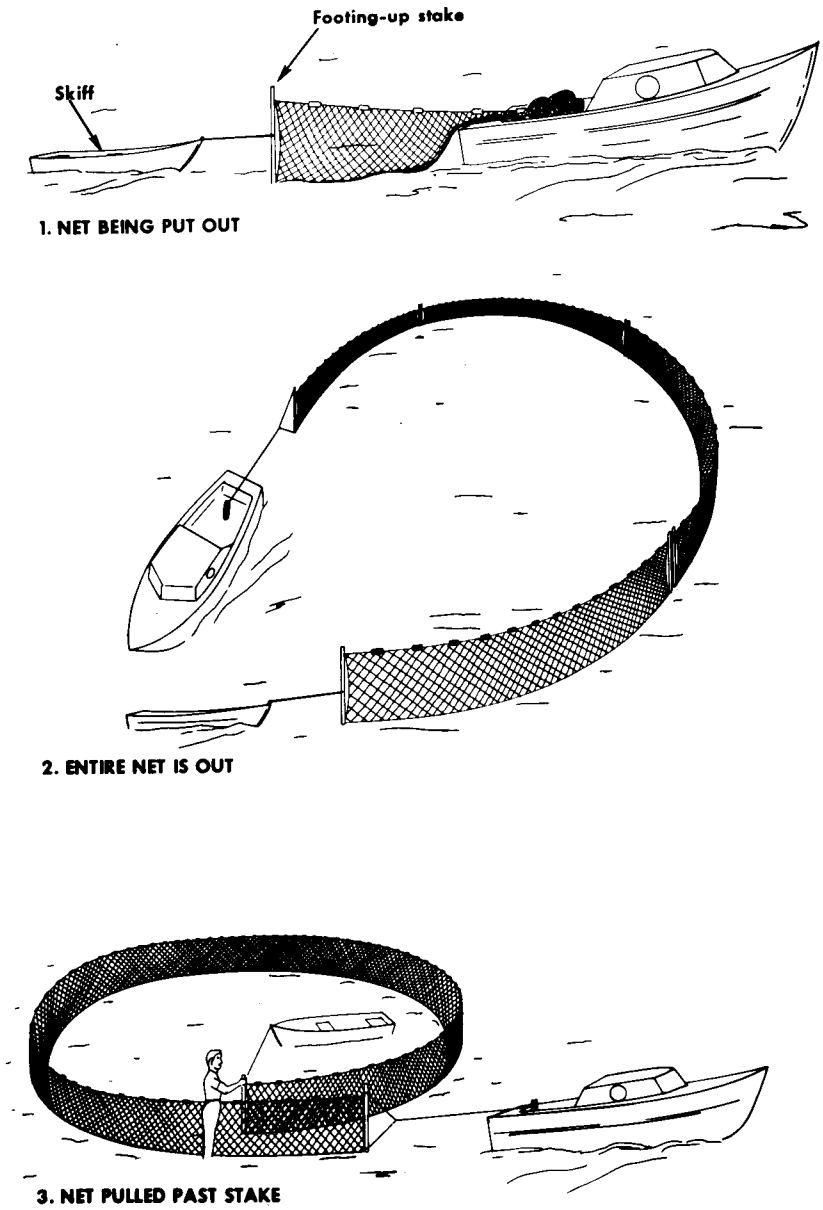


Table 1.—Pounds of fish landed and sold, dockside value of catch and number of long-haul crews in operation from 1964-1972. Data from the National Marine Fisheries Service, Branch of Statistics, Beaufort, N.C.

Species	1964	1965	1966	1967	1968	1969	1970	1971	1972
	Catch in Pounds								
Alewife	—	—	1,000	35,200	76,100	115,000	30,000	—	—
Atlantic croaker	309,500	234,000	137,400	273,800	178,100	126,300	133,000	204,300	677,464
Atlantic menhaden	27,600	26,200	5,200	5,000	20,000	—	—	—	—
Black drum	2,600	10,700	30,500	14,700	9,400	2,700	3,100	4,000	5,511
Bluefish	144,500	180,600	281,400	314,300	506,200	333,800	245,400	215,500	403,648
Butterfish	34,000	82,200	33,500	10,800	18,900	2,800	300	500	5,464
Carp	—	—	71,100	40,300	—	3,700	—	800	—
Cobia	10,300	7,400	7,700	10,000	6,600	6,300	6,300	10,300	2,609
Eels	—	—	800	—	—	—	—	—	—
Freshwater catfishes	—	—	58,300	18,100	700	14,500	—	3,200	—
Harvestfish	13,500	42,300	22,900	54,900	6,900	13,700	9,200	23,700	24,121
Hickory shad	—	—	13,800	500	22,300	300	—	—	—
King mackerel	6,400	—	—	—	—	—	—	—	—
Northern kingfish	82,800	85,000	10,100	23,400	15,500	4,600	19,200	31,600	22,340
Pigfish	29,500	27,800	41,100	90,500	90,800	156,000	145,900	189,500	137,601
Pompano	2,300	5,100	9,900	28,200	5,800	3,000	2,000	2,200	4,357
Porgy	—	—	500	600	—	—	—	—	—
Red drum	84,400	58,000	21,700	4,900	7,400	1,200	2,400	3,100	5,551
Sea bass	—	—	300	600	—	—	—	—	—
Sharks	3,500	—	—	—	3,100	—	—	—	—
Sheepshead	2,800	3,900	5,100	2,300	2,000	1,000	800	3,700	2,141
Spadefish	2,100	200	—	—	1,600	300	1,600	3,900	634
Spanish mackerel	33,600	37,200	9,300	34,800	28,900	74,800	33,200	26,600	7,178
Spot	528,500	358,000	532,600	1,501,300	988,800	702,900	1,098,200	808,400	2,130,444
Spotted seatrout	62,700	80,300	51,800	22,200	27,200	49,900	107,300	87,400	274,370
Striped bass	—	—	32,800	56,500	25,300	17,500	—	6,200	300
Striped mullet	—	—	48,900	60,300	15,600	900	400	—	1,831
Sturgeon	4,900	10,800	300	100	200	—	—	300	100
Summer flounder	161,200	286,400	67,400	29,000	50,900	6,900	4,600	2,100	13,608
Swellfish	—	—	—	—	—	1,400	—	2,200	—
Weakfish	97,300	105,000	180,800	269,800	154,400	184,300	187,700	168,400	255,289
White perch	—	—	22,200	8,600	4,200	3,600	—	—	100
Yellow perch	—	—	5,300	7,100	2,500	2,200	—	—	200
Miscellaneous	75,000	87,500	521,700	271,700	648,500	178,700	—	613,000	—
Total Catch	1,719,000	1,728,600	2,225,400	3,189,500	2,917,900	2,008,300	2,030,600	2,410,900	3,974,861
Value in dollars to fishermen at dockside	192,731	183,295	162,175	244,983	277,043	227,751	198,480	233,066	444,948
No. of long-haul crews	35	33	45	47	40	37	34	24	[1]

[1] Information not available at present.

previous years (Table 1) probably resulted because there was often only a market for fresh-caught spot in the first weeks of the fishery. After making a few big initial catches, fishermen could not sell their fish because the market was saturated. As a result, some fishermen began storing large amounts of spot in rented, cold storage plants in hopes of selling when the market improved later in the year. Handling, boxing, and freezing costs, however, reduced profits so as to make it unfeasible to fish some years. This probably accounted for some of the decrease from 13 long-haul crews on Harkers Island, N.C. in the mid-1950's to three in 1972. Because catches in 1972 were good and market demands improved from previous years, we expect the number of long-haul fishery crews to increase in the area of Harkers Island, N.C.

The previous history and present status of long-haul fishing indicate that it is still economical and efficient for harvesting fish in shallow water. The cost-return ratio, as in other fishing operations, for long-haul fishing is dependent on fish abundance, market value of the fish and duration of the fishing season. In North Carolina, long-haul fishing remains somewhat profitable, even in years of low abundance or low market prices, because fishermen use their boats in other fishing operations the rest of the year. Rather than enter long-haul fishing with new equipment which could involve a sizeable investment for two pull boats, two skiffs and the nets, it would be more economical

for a fisherman to obtain used equipment or modify gear used in other fishing operations.

Long-haul fishing with "swiper nets" is becoming more popular in certain North Carolina areas. This method has almost completely replaced the traditional long-haul method in portions of Pamlico Sound but no "swiper" nets are presently known to be used in the Harkers Island area. We do not have any knowledge of the comparative cost-return ratio for the two methods but suspect that it varies among different types of areas.

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